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10/637,408	08/07/2003	Sachin G. Deshpande	SLA1306	3156
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			ART UNIT 2109	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/637,408

Applicant(s)

DESHPANDE, SACHIN G.

Examiner

Kacy Verdi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 August 2003.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-33 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 29 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 01 December 2003  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This office action is in response to the Application filed on August 7, 2003. Claims 1-33 are pending in the current application.

#### ***Information Disclosure Statement***

1. The information disclosure statement filed December 1, 2003 only includes one sheet (1 of 2) but appears to be missing a second sheet; therefore, only one sheet of the information disclosure statement contained in the application file is being considered by the examiner.

#### ***Drawings***

2. Figures 1, 2, 3, and 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

- a. figure 2 bi-direction arrow linking reference number 203 and 204, and bi-direction arrow linking reference number 203 and 206, which are disclosed on page 6, paragraph [36], require reference numbers;
- b. figure 2 bi-directional arrows linking reference number 203 and 210 which are disclosed on page 7, paragraph [38], require reference numbers;
- c. figure 2 bi-directional arrow linking reference number 203 and 208, and bi-directional arrow linking reference number 208 and 210 should be removed since the links are not disclosed in the specification; and
- d. figure 2 bi-directional arrow linking reference number 203 and 212, and bi-directional arrow linking reference number 212 and 214 should be removed since the links are not disclosed in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

- a. figure 4, reference character 410 and 414;
- b. figure 4, reference characters 508, 510, and 512;
- c. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The

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abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

6. The abstract of the disclosure is objected to because line 2 recites "...is disclosed" which contains implied phrasing, examiner suggests removing the phrase "is disclosed" from line 2.

7. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

- (I) **SEQUENCE LISTING** (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Please note Brief Summary of Invention is missing from the specification.

**Content of Specification**

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
  - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

- (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).



- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

Please note the title of the invention is not placed at the top of the first page of the specification.

Please note the claims do not commence on a separate sheet and begin on the last page of the disclosure, page 13.

- 8. The disclosure is objected to because
  - a. page 3, paragraph [18], line 2 recites "...is disclosed" which contains implied phrasing, examiner suggests removing the phrase "is disclosed" from line 2; and
  - b. page 4, paragraph [28], line 2 recites "...is disclosed" which contains implied phrasing, examiner suggests removing the phrase "is disclosed" from line 2.

***Claim Rejections - 35 USC § 101***

- 9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 1-27 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

With respect to claims 1-17, a "method" is being recited; however, it appears that the method would reasonably be interpreted by one of ordinary skill in the art as software, per se. The method as claimed does not set forth a practical application of the invention and does not make use of memory or computer storage media to produce a tangible result. As such, it is believed that the method of claims 1-17 is reasonably interpreted as functional descriptive material, per se.

With respect to claims 18-27, "a set of executable instructions" is being recited; however, it appears that a set of executable instructions would reasonably be interpreted by one of ordinary skill in the art as software, per se. The set of executable instructions as claimed does not set forth a practical application of the invention or produce a tangible result. As such, it is believed that the set of executable instructions of claims 18-27 is reasonably interpreted as functional descriptive material, per se.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-7, 10-14, 17-21, 24, 27-29, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Dual Stack Hosts using "Bump-in-the-API". (BIA) by Lee et al. (hereinafter Lee) in view of U.S. Patent No. 5,721,876 to Yu et al. (hereinafter Yu).

13. As to claim 1, Lee teaches the invention substantially as claimed including a method for a computer system for providing communication between a first system and a second system, wherein the first system uses a first version of a protocol and the second system uses a second version of the protocol, the method comprising:

providing a first application on the first system (IPv4 application Fig. 1, page 4);

making a function call to a socket Application Programming Interface (API) for the first version (call IPv4 Socket API function Fig. 2, page 8); translating the function call to a translated function call (Translate IPv4 into IPv6, page 2) wherein the translated function call uses raw sockets (ICMP Message handling section 5.2, page 10);

making a function call to the socket API for the translated function call (invoke IPv6 socket API function page 6, section 4.1, lines 23-24) that uses raw sockets (ICMP Message handling section 5.2, page 10); and

passing a packet to a stack for the first version of the protocol (IPv4 Application sends packet to stack when invoking socket API function page 6, section 4.1, lines 14-15).

Although Lee teaches the invention substantially, Lee does not specifically disclose making a function call to a socket Application Programming Interface (API) for the first version; translating the function call to a translated function call wherein the translated function call uses raw sockets; and

making a function call to the socket API for the translated function call that uses raw sockets.

However, Yu teaches making a function call to a socket Application Programming Interface (API) for the first version (invoke socket function 200, Fig. 2, col. 8, lines 15-17); translating the function call to a translated function call wherein the translated function call uses raw sockets (raw socket delivery col. 7, lines 27-34); and

making a function call to the socket API for the translated function call (invoke socket function 200, Fig. 2, col. 8, lines 15-17) that uses raw sockets (raw socket delivery col. 7, lines 27-34).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Lee to include the feature of making a function call to a socket Application Programming Interface (API) for the first version (invoke socket function 200, Fig. 2, col. 8, lines 15-17); translating the function call to a translated function call wherein the translated function call uses raw sockets (raw socket delivery col. 7, lines 27-34); and

making a function call to the socket API for the translated function call (invoke socket function 200, Fig. 2, col. 8, lines 15-17) that uses raw sockets (raw socket delivery col. 7, lines 27-34) as taught by Yu because this provides a mechanism for proprietary application programs, utilizing communication network protocols, such as TCP/IP, implemented as part of the proprietary operating system (col. 1, lines 36-39), to access host TCP/IP protocol stack communication facilities, which in turn eliminates the need to communicate through additional protocol stacks (col. 3, lines 11-17).

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14. As to claim 2, Lee as modified teaches the method of claim 1, wherein the first version of the protocol is IPv4 (Internet Protocol version 4) and wherein the second version of the protocol is IPv6 (Internet Protocol version 6) (section 2.1, page 3, lines 2-3).

15. As to claim 3, Lee as modified teaches the method of claim 2, further comprising supplying IP headers (Address Mapper supplies destination addresses to header, Fig. 1).

16. As to claim 4, Lee as modified teaches the method of claim 2, further comprising supplying IP headers only once (reply with one IPv4 address Fig. 2, page 7).

17. As to claim 5, Lee as modified teaches the method of claim 2, wherein the method is implemented by inserting an API level translator layer between a socket API layer and a TCP/IPv4 layer (API translator, Fig. 1, section 1, page 2, lines 13-14).

18. As to claim 6, Lee as modified teaches the method of claim 2, wherein the method is implemented without using an IPv6 stack (TCP/IP Network Protocol Stack Facility 99, Fig. 1b of Yu).

19. As to claim 7, Lee as modified teaches the method of claim 4, further comprising passing the packet to a network card driver (layer beneath TCP/IP module, section 1, page 2, line 7).

20. As to claim 10, Lee as modified teaches the method of claim 2, further comprising using a Name Resolver service to perform name to address resolution related functions (Name Resolver, Fig. 1).

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21. As to claim 11, Lee as modified teaches the method of claim 10, wherein the Name Resolver service is configured to run on a separate host that includes an IPv4 stack and an IPv6 stack (Name Resolver, Fig. 1).

22. As to claim 12, Lee as modified teaches the method of claim 11, wherein name to address resolution functions of the Name Resolver service use the IPv6 stack (Name Resolver, section 3.2, page 4-5).

23. As to claim 13, Lee as modified teaches the method of claim 12, wherein the Name Resolver service is further configured to receive a query from the first system, use the address resolution functions to obtain a record and send the record to the first system (Behavior of Originator, Fig. 2, page 7).

24. As to claim 14, Lee as modified teaches the method of claim 2, further comprising providing an alternate implementation for a sending-related IPv4 socket function, wherein the alternate implementation comprises:

intercepting an IPv4 socket API call to send a packet (Appendix A, API List Intercepted by BIA, page 13, line 32 of Lee);

translating the IPv4 socket API call (Translate IPv4 into IPv6, page 2 of Lee) to use a raw socket (raw socket delivery col. 7, lines 27-34 of Yu);

providing transport and IPv6 headers (Address Mapper supplies destination addresses to header, Fig. 1 of Lee);

calling a corresponding IPv4 socket API function for the raw socket call (invoke IPv6 socket API function page 6, section 4.1, lines 23-24 of Lee) (invoke socket function 200, Fig. 2, col. 8, lines 15-17 of Yu); and

passing the packet to the stack stack (IPv4 Application sends packet to stack when invoking socket API function page 6, section 4.1, lines 14-15 of Lee).

25. As to claim 17, Lee as modified teaches the method of claim 14, further comprising passing the packet to a network card driver (TCP/IP module passes packet to next network card driver layer, which is the layer beneath TCP/IP module, section 1, page 2, line 7).

26. As to claim 18, Lee teaches the invention substantially as claimed including a set of executable instructions (for example socket API function calls) for implementing a method in an IPv4 (Internet Protocol version 4) computer system for providing communication between the IPv4 system and an IPv6 (Internet Protocol version 6) system, the method comprising:

providing an IPv4 application on the IPv4 system (IPv4 application Fig. 1, page 3);

making a function call to an IPv4 socket Application Programming Interface (API) (call IPv4 Socket API function Fig. 2, page 8);

translating the function call to a translated function call (Translate IPv4 into IPv6, page 2) wherein the translated function call uses raw sockets (ICMP Message handling section 5.2, page 10);

making another function call to the IPv4 socket API for the translated function call (invoke IPv6 socket API function page 6, section 4.1, lines 23-24) that uses raw sockets (ICMP Message handling section 5.2, page 10); and

passing a packet to an IPv4 stack (IPv4 Application sends packet to stack when invoking socket API function page 6, section 4.1, lines 14-15).

Although Lee teaches the invention substantially, Lee does not specifically disclose translating the function call to a translated function call wherein the translated function call uses raw sockets; and

making another function call to the IPv4 socket API for the translated function call that uses raw sockets.

However, Yu teaches translating the function call to a translated function call wherein the translated function call uses raw sockets (raw socket delivery col. 7, lines 27-34); and

making another function call to the IPv4 socket API for the translated function call (invoke socket function 200, Fig. 2, col. 8, lines 15-17) that uses raw sockets (raw socket delivery col. 7, lines 27-34).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Lee to include the feature of translating the function call to a translated function call wherein the translated function call uses raw sockets (raw socket delivery col. 7, lines 27-34); and

making another function call to the IPv4 socket API for the translated function call (invoke socket function 200, Fig. 2, col. 8, lines 15-17) that uses raw sockets (raw socket delivery col. 7, lines 27-34) as taught by Yu because this provides a mechanism for proprietary application programs, utilizing communication network protocols, such as TCP/IP, implemented as part of the proprietary operating system (col. 1, lines 36-39), to



access host TCP/IP protocol stack communication facilities, which in turn eliminates the need to communicate through additional protocol stacks (col. 3, lines 11-17).

27. As to claim 19, Lee as modified teaches the set of executable instructions (for example socket API function calls) of claim 18, wherein the method further comprises supplying IP headers only once (reply with one IPv4 address Fig. 2, page 7).

28. As to claim 20, Lee as modified teaches the set of executable instructions (for example socket API function calls) of claim 18, wherein the method is implemented by inserting an API level translator layer between a socket API layer and a TCP/IPv4 layer (API translator, Fig. 1, section 1, page 2, lines 13-14).

29. As to claim 21, Lee as modified teaches the set of executable instructions (for example socket API function calls) of claim 18, wherein the method is implemented without using an IPv6 stack (TCP/IP Network Protocol Stack Facility 99, Fig. 1b of Yu).

30. As to claim 24, Lee as modified teaches the set of executable instructions (for example socket API function calls) of claim 18, wherein the method further comprises providing an alternate implementation for a sending-related IPv4 socket function, wherein the alternate implementation comprises:

intercepting an IPv4 socket API call to send data (Appendix A, API List Intercepted by BIA, page 13, line 32 of Lee);

translating the IPv4 socket API call (Translate IPv4 into IPv6, page 2 of Lee) to use a raw socket (raw socket delivery col. 7, lines 27-34 of Yu); providing transport and IPv6 headers (Address Mapper supplies destination addresses to header, Fig. 1 of Lee);

calling a corresponding IPv4 socket API function for the raw socket (invoke IPv6 socket API function page 6, section 4.1, lines 23-24 of Lee) (invoke socket function 200, Fig. 2, col. 8, lines 15-17 of Yu); and

passing the data to the IPv4 stack (IPv4 Application sends packet to stack when invoking socket API function page 6, section 4.1, lines 14-15 of Lee).

31. As to claim 27, Lee as modified teaches the set of executable instructions (for example socket API function calls) of claim 24, wherein the method further comprises passing the packet to a network card driver (TCP/IP module passes packet to next network card driver layer, which is the layer beneath TCP/IP module, section 1, page 2, line 7).

32. As to claim 28, Lee teaches the invention substantially as claimed including a system for enabling an IPv4 (Internet Protocol version 4) application to communicate across a computer network using an IPv6 (Internet Protocol version 6) system, the system comprising:

- a computing device;

- executable instructions (for example socket API function calls) executable on the computing device, wherein the executable instructions are configured to implement a method comprising:

- making a function call to an IPv4 socket Application Programming Interface (API) (call IPv4 Socket API function Fig. 2, page 8);

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translating the function call to a translated function call (Translate IPv4 into IPv6, page 2) wherein the translated function call uses raw sockets (ICMP Message handling section 5.2, page 10);

making another function call to the IPv4 socket API for the translated function call (invoke IPv6 socket API function page 6, section 4.1, lines 23-24) that uses raw sockets (ICMP Message handling section 5.2, page 10); and

passing a packet to an IPv4 stack (IPv4 Application sends packet to stack when invoking socket API function page 6, section 4.1, lines 14-15).

Although Lee teaches the invention substantially, Lee does not specifically disclose a computing device;

executable instructions executable on the computing device, wherein the executable instructions are configured to implement a method comprising:

translating the function call to a translated function call wherein the translated function call uses raw sockets; and

making another function call to the IPv4 socket API for the translated function call that uses raw sockets.

However, Yu teaches a computing device (Hardware Level 56, Operating System Level 64, and User Level 62, Fig. 1a);

executable instructions executable on the computing device (Hardware Level 56, Operating System Level 64, and User Level 62, Fig. 1a), wherein the executable instructions are configured to implement a method comprising:

translating the function call to a translated function call wherein the translated function call uses raw sockets (raw socket delivery col. 7, lines 27-34); and

making another function call to the IPv4 socket API for the translated function call (invoke socket function 200, Fig. 2, col. 8, lines 15-17) that uses raw sockets (raw socket delivery col. 7, lines 27-34).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Lee to include the feature of a computing device (Hardware Level 56, Operating System Level 64, and User Level 62, Fig. 1a);

executable instructions executable on the computing device (Hardware Level 56, Operating System Level 64, and User Level 62, Fig. 1a), wherein the executable instructions are configured to implement a method comprising:

translating the function call to a translated function call wherein the translated function call uses raw sockets (raw socket delivery col. 7, lines 27-34); and

making another function call to the IPv4 socket API for the translated function call (invoke socket function 200; Fig. 2, col. 8, lines 15-17) that uses raw sockets (raw socket delivery col. 7, lines 27-34) as taught by Yu because this provides a mechanism for proprietary application programs, utilizing communication network protocols, such as TCP/IP, implemented as part of the proprietary operating system (col. 1, lines 36-39), to access host TCP/IP protocol stack communication facilities, which in turn eliminates the need to communicate through additional protocol stacks (col. 3, lines 11-17).

33. As to claim 29, Lee as modified teaches the system of claim 28, further comprising an API level translator layer between a socket API layer and a TCP/IPv4 layer (API translator, Fig. 1, section 1, page 2, lines 13-14).

34. As to claim 31, Lee as modified teaches the system of claim 28, wherein the method further comprises providing an alternate implementation for a sending-related IPv4 socket function, wherein the alternate implementation comprises:

intercepting an IPv4 socket API call to send the packet (Appendix A, API List Intercepted by BIA, page 13, line 32 of Lee);

translating the IPv4 socket API call (Translate IPv4 into IPv6, page 2 of Lee) to use a raw socket (raw socket delivery col. 7, lines 27-34 of Yu);

providing transport and IPv6 headers (Address Mapper supplies destination addresses to header, Fig. 1 of Lee);

calling a corresponding IPv4 socket API function for the raw socket (invoke IPv6 socket API function page 6, section 4.1, lines 23-24 of Lee) (invoke socket function 200, Fig. 2, col. 8, lines 15-17 of Yu); and

passing the packet to the IPv4 stack (IPv4 Application sends packet to stack when invoking socket API function page 6, section 4.1, lines 14-15 of Lee).

35. Claims 8, 22-23, and 30, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Yu as applied to claims 2, 14, and 28 above, and further in view of U.S. Patent Application 2003/0165160 A1 to Minami et al. (hereinafter Minami).

36. As to claim 8, Lee as modified by Yu teaches the invention substantially as claimed including the method of claim 2, further comprising providing an alternate implementation for a reception-related IPv4 socket function, wherein the alternate implementation comprises:

- receiving an incoming packet on a raw socket (receive data from IPv6 host, Fig. 3, page 9 of Lee) (raw socket delivery col. 7, lines 27-34 of Yu);

- checking a source host to determine the proper destination for the incoming packet;

- checking a port number for the incoming packet;

- stripping a transport and IP headers from the incoming packet; and

- passing a payload (data) to a destination application (using IPv4 function call to IPv4 Application Figure 3, page 9 of Lee) (raw socket delivery col. 7, lines 27-34 of Yu).

Although Lee as modified by Yu teaches the invention substantially, Lee as modified by Yu does not specifically disclose checking a source host to determine the proper destination for the incoming packet;

- checking a port number for the incoming packet;

- stripping a transport and IP headers from the incoming packet; and

- passing a payload (data) to a destination application.

However, Minami teaches checking a source host to determine the proper destination for the incoming packet (IP header field parsing module 2062, Fig. 20, paragraph [0280]-[0289]);

checking a port number for the incoming packet (parse destination port field of header, paragraph [0069]);

stripping a transport and IP headers from the incoming packet (Network Protocol Layer 101, Fig. 1, paragraph [0065]); and

passing a payload (data) to a destination application (passed to Data Handler 102, Fig. 1, paragraph [0065]).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Lee as modify by Yu to include the feature of checking a source host to determine the proper destination for the incoming packet (IP header field parsing module 2062, Fig. 20, paragraph [0280]-[0289]);

checking a port number for the incoming packet (parse destination port field of header, paragraph [0069]);

stripping a transport and IP headers from the incoming packet (Network Protocol Layer 101, Fig. 1, paragraph [0065]); and

passing a payload (data) to a destination application (passed to Data Handler 102, Fig. 1, paragraph [0065]) as taught by Minami because this provides a mechanism for decoding multiple network protocols in a manner concurrently and processes packet data in one pass, thereby reducing system memory and form factor requirements, while eliminating software CPU overhead (paragraph [0017]).

37. As to claim 22, Lee as modified teaches the set of executable instructions (for example socket API function calls of Lee) of claim 18, wherein the method further

comprises providing an alternate implementation for a reception-related IPv4 socket function, wherein the alternate implementation comprises:

- receiving an incoming packet on a raw socket (receive data from IPv6 host, Fig. 3, page 9 of Lee) (raw socket delivery col. 7, lines 27-34 of Yu);

- checking a source host to determine the proper destination for the incoming packet (IP header field parsing module 2062, Fig. 20, paragraph [0280]-[0289] of Minami);

- checking a port number for the incoming packet (parse destination port field of header, paragraph [0069] of Minami);

- stripping a transport and IP headers from the incoming packet (Network Protocol Layer 101, Fig. 1, paragraph [0065] of Minami); and

- passing a payload (data) to the IPv4 application (using IPv4 function call to IPv4 Application Figure 3, page 9 of Lee) (raw socket delivery col. 7, lines 27-34 of Yu) (passed to Data Handler 102, Fig. 1, paragraph [0065] of Minami).

38. As to claim 23, Lee as modified teaches the set of executable instructions (for example socket API function calls of Lee) of claim 22, further comprising a computer-readable medium (memory 58b, Fig. 1a of Yu) for storing the executable instructions.

39. As to claim 30, Lee as modified teaches the system of claim 28, wherein the method further comprises providing an alternate implementation for a reception-related IPv4 socket function, wherein the alternate implementation comprises:

- receiving an incoming packet on a raw socket (receive data from IPv6 host, Fig. 3, page 9 of Lee) (raw socket delivery col. 7, lines 27-34 of Yu);



checking a source host to determine the proper destination for the incoming packet (IP header field parsing module 2062, Fig. 20, paragraph [0280]-[0289] of Minami);

checking a port number for the incoming packet (parse destination port field of header, paragraph [0069] of Minami);

stripping a transport and IP headers from the incoming packet (Network Protocol Layer 101, Fig. 1, paragraph [0065] of Minami); and

passing a payload (data) to the IPv4 application (using IPv4 function call to IPv4 Application Figure 3, page 9 of Lee) (raw socket delivery col. 7, lines 27-34 of Yu) (passed to Data Handler 102, Fig. 1, paragraph [0065] of Minami).

40. Claims 9, 15-16, 25-26, 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Yu as applied to claims 2, 14, 24, and 28 above, and further in view of "Transition Mechanisms for IPv6 Hosts and Routers" by R. Gilligan (hereinafter Gilligan).

41. As to claim 9, Lee as modified by Yu teaches the invention substantially as claimed including the method of claim 2, further comprising performing tunneling of IPv6 packets over IPv4 routing infrastructure.

Although Lee as modified by Yu teaches the invention substantially, Lee as modified by Yu does not specifically disclose performing tunneling of IPv6 packets over IPv4 routing infrastructure.

However, Gilligan teaches performing tunneling of IPv6 packets over IPv4 routing infrastructure (Configured and Automatic tunneling of Ipv6 over IPv4, sections 4 and 5).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Lee as modified by Yu to include the feature performing tunneling of IPv6 packets over IPv4 routing infrastructure (Configured and Automatic tunneling of Ipv6 over IPv4, sections 4 and 5) as taught by Gilligan because this provides a mechanism for maintaining compatibility with IPv4 while deploying Ipv6 (section 1 Introduction, page 2, lines 3-4).

42. As to claim 15, Lee as modified teaches the method of claim 14, further comprising performing tunneling of IPv6 packets over IPv4 routing infrastructure (Configured and Automatic tunneling of Ipv6 over IPv4, sections 4 and 5 of Gilligan).

43. As to claim 16, Lee as modified teaches the method of claim 14, further comprising fragmenting the packet (Tunnel MTU and Fragmentation, section 3.2, page 11 of Gilligan).

44. As to claim 25, Lee as modified teaches the set of executable instructions (for example socket API function calls of Lee) of claim 24, wherein the method further comprises performing tunneling of IPv6 packets over IPv4 routing infrastructure (Configured and Automatic tunneling of Ipv6 over IPv4, sections 4 and 5 of Gilligan).

45. As to claim 26, Lee as modified teaches the set of executable instructions (for example socket API function calls of Lee) of claim 24, wherein the method further comprises fragmenting the packet (Tunnel MTU and Fragmentation, section 3.2, page 11 of Gilligan).

46. As to claim 32, Lee as modified teaches the system of claim 28, wherein the method further comprises performing tunneling of IPv6 packets over IPv4 routing

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infrastructure (Configured and Automatic tunneling of Ipv6 over IPv4, sections 4 and 5 of Gilligan).

47. As to claim 33, Lee as modified teaches the system of claim 28, wherein the method further comprises fragmenting the packet (Tunnel MTU and Fragmentation, section 3.2, page 11 of Gilligan).

### ***Conclusion***

48. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S Patent No. 5,774,660 discloses a multi-node server transmits world-wide-web pages to network-based browser clients.

U.S Patent No. 6,038,233 discloses a translator for coupling a first network such as an internet protocol version 4 (IPv4) and a second network such as an internet protocol version 6 (IPv6) having different addressing architectures for IP addresses due to a difference in version or the like so as not to exhaust the IP addresses of one of the two networks, a network system using the translator, and a network coupling method.

U.S. Patent No. 6,360,265 B1 discloses a Network Address Translator (NAT) processes multi-media calls between an H.323 multi-media terminal and the same H.323 multi-media server of many H.323 multi-media servers.

U.S Patent No. 6,675,218 B1 discloses a system for user-space packet modification, including a set of kernel code and a user-level application programming

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interface (API). The system facilitates creation of a special socket for passing packets between kernel space and user space.

U.S Patent No. 7,072,338 B2 discloses In an apparatus, there are provided an IP transmitting and receiving unit for transmitting and receiving an IPv4 packet and an IPv6 packet; an IP header converting unit for performing a mutual conversion of the IPv4 packet and the IPv6 packet by an IP header conversion; a DNS substituting unit for receiving a domain information capturing request sent from an IPv4 terminal or an IPv6 terminal and substituting its process; an IPv4 address capturing unit for capturing an IPv4 address from a DHCP server; and an IP address conversion information holding unit for holding an IPv6 address of the IPv6 terminal and the IPv4 address captured by the IPv4 address capturing unit in correspondence to each other.

"Advanced Sockets API for IPv6" by W. Stevens and M. Thomas, (RFC-2292), discloses standardization specifications for the advanced API features of "advanced" applications run under IPv6, to provide portability for applications that use raw sockets under IPv6.

### **CONTACT INFORMATION**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kacy Verdi whose telephone number is (571) 270-1654. The examiner can normally be reached on Monday-Friday 7:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao Wu can be reached on (571) 272-7761. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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10 January 2007

  
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